SOIL BIOLOGY & BIOCHEMISTRY

Volume Contents and Author Index

Volume 30 1998

Pergamon

SOIL BIOLOGY & BIOCHEMISTRY

ISSS-AISS-IBG Cooperating Journal of the International Society of Soil Science

EDITOR-IN-CHIEF

PROFESSOR J. S. WAID, P.O. Box 760, Buderim, Queensland 4556, Australia: *Fax* (+61) 754 769 183: *E-mail* jswsbbbud@peg.apc.org

ASSOCIATE EDITORS

PROFESSOR J. M. ANDERSON, Department of Biological Sciences, University of Exeter, Prince of Wales Road, Exeter EX4 4PS, England: *Fax* +44 (1392) 263700: *E-mail* j.m.anderson@exeter.ac.uk

PROFESSOR R. G. BURNS, Department of Biosciences, University of Kent, Canterbury, Kent CT2 7NJ, England: *Fax* +44 (1227) 763 912: *E-mail* r.g.burns@ukc.ac.uk

PROFESSOR D. C. COLEMAN, Institute of Ecology, Ecology Annex, University of Georgia, Athens, GA 30602-2360, U.S.A.: *Fax* +1 (706) 542 2423: *E-mail* coleman@sparc.ecology.uga.edu

BOARD OF SUBJECT EDITORS

(For areas of expertise please see Notes for Authors, Vol. 30 No. 7)

PROFESSOR H. ANTOUN, RSVS Pavillon Charles-Eugène Marchand, Université Laval Ste-Foy (Québec), Canada G1K 7P4: *Fax* +1 (418) 656 7176: *E-mail* antoun@rsvs.ulaval.ca

DR M.-M. COÛTEAUX, Centre d'Ecologie Fonctionnelle et Evolutive, CNRS, BP 5051, route de Mende, 34033-Montpellier Cedex 1, France: *Fax* +33 4 67 41 21 38: *E-mail* couteaux@cefe.cnrs-mop.fr

PROFESSOR J. DIGHTON, Rutgers University, Division of Pinelands Research, Institute of Marine & Coastal Science, Department of Biology, Camden College of Arts and Sciences, Camden, NJ 08102, U.S.A.: *Fax* +1 (609) 225 6495: *E-mail* dighton@crab.rutgers.edu

DR J. DORAN, USDA-ARS, 116 Keim Hall, University of Nebraska-Lincoln, Lincoln, NB 68583-0915, U.S.A.: *Fax* +1 (402) 472 0516: *E-mail* jdoran@unlinfo.unl.edu

PROFESSOR R. A. DRIJBER, Department of Agronomy, Crop, Range, Soil & Water, Weed Sciences, 279 Plant Science, University of Nebraska-Lincoln, P.O. Box 830915, Lincoln, NB 68683-0915, U.S.A.: *Fax* +1 (402) 472 7904: *E-mail* agro107@unlvm.unl.edu

DR A. GANGE, School of Biological Sciences, Division of Biology, Royal Holloway, University of London, Egham, Surrey TW20 0EX, England: *Fax* +44 (0) 1784 470756: *E-mail* a.gange@rhbnc.ac.uk

PROFESSOR K. E. GILLER, Department of Biological Sciences, Wye College, University of London, Wye, Ashford, Kent TN25 5AH, England: *Fax* +44 (1233) 813140: *E-mail* k.giller@wye.ac.uk

PROFESSOR T. HATTORI, 1-6-2 Komegafukuro, Aoba-Ku, Sendai 980, Japan: *Fax* (81 22) 266 1028: *E-mail* atic-tr@dd.iij4u.or.jp

PROFESSOR H. INSAM, Universität Innsbruck, Institut für Mikrobiologie, Technikerstr 25, A-6020 Innsbruck, Austria: *Fax* +43 512 507 2928: *E-mail* heribert.insam@uibk.ac.at

DR R. G. JOERGENSEN, Institut für Bodenwissenschaft, Von-Siebold-Str 4, D-37075 Göttingen, Germany: *Fax* +49 (551) 395502: *E-mail* rjoerge@vendigo.uni-soilsci.gwdg.de

PROFESSOR D. A. KLEIN, Department of Microbiology, College of Veterinary Medicine and Biomedical Sciences, Fort Collins, CO 80523, U.S.A.: *Fax* +1 (303) 491 1815: *E-mail* daksplk@lamar.colostate.edu

PROFESSOR H. KOMADA, 368 Kitakoyama, Geino, Mie 514-22, Japan: *Fax* +81 592 65 5556

DR A. KRETZSCHMAR, INRA, Station de Zoologie, Laboratoire de Physique et Biologie des Sols, BP 91, 84143 Montfavet Cedex, France: *Fax* (33 90) 31 62 98: ktz@avignon.inra.fr

DR R. G. LINDERMAN, USDA-ARS, Horticultural Crops Research Laboratory, 3420 NW Orchard Avenue, Corvallis, OR 97330, U.S.A.: *Fax* +1 (541) 750 8764: lindermr@bcc.orst.edu

PROFESSOR S. P. MCGRATH, Soil Science Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ, England: *Fax* +44 (1582) 469688: *E-mail* steve.mcgrath@bbsrc.ac.uk

PROFESSOR A. OGRAM, Institute of Food and Agricultural Sciences, Soil and Water Science Department, University of Florida, 2169 McCarty Hall, P.O. Box 110290, Gainesville, FL 32611-0290, U.S.A.: *Fax* +1 (352) 392 3902: *E-mail* avo@gnv.ifas.ufl.edu

DR C. H. ROBINSON, School of Life, Basic Medical and Health Sciences, Division of Life Sciences, King's College London, University of London, Campden Hill Road, London W8 7AH, England: *Fax* +44 (0) 171 333 4500: *E-mail* clare.robinson@kcl.ac.uk

PROFESSOR DR S. SCHEU, Darmstadt University of Technology, Institute of Zoology, Schnittspahnstrasse 3, D-64287 Darmstadt, Germany: *Fax* +49 6151 166111: *E-mail* scheu@biol.bio.tu-darmstadt.de

PROFESSOR J. SCHIMEL, Ecology, Evolution and Marine Biology, University of California, Santa Barbara, CA 93106, U.S.A.: *Fax* +1 (805) 893 4724: *E-mail* schimel@lifesci.lscf.ucsb.edu

PROFESSOR K. M. SCOW, Department of Land, Air and Water Resources, Hoagland Hall, University of California, Davis, CA 95616, U.S.A.: *Fax* +1 (916) 752 1552: *E-mail* kmscow@ucdavis.edu

DR J. L. SMITH, USDA-ARS, 215 Johnson Hall, Washington State University, Pullman, WA 99164-6421, U.S.A.: *Fax* +1 (509) 335 3842: *E-mail* jlsmith@mail.wsu.edu

DR G. SPARLING, Environmental Quality Group, Landcare Research NZ Ltd, Private Bag 3127, Hamilton, New Zealand: *Fax* (64 7) 838 4442: *E-mail* sparlingg@landcare.cri.nz

PROFESSOR G. STOTZKY, Department of Biology, New York University, Washington Square, New York, NY 10013, U.S.A.: *Fax* +1 (212) 995 4015: *E-mail* stotzky@is2.nyu.edu

DR K. R. TATE, Manaaki Whenua Landcare Research, Private Bag 11052, Palmerston North, New Zealand: *Fax* (64 6) 355 9230: *E-mail* Tatek@landcare.cri.nz

PROFESSOR C. VAN KESSEL, Department of Agronomy and Range Science, College of Agricultural and Environmental Sciences, Agricultural Experiment Station, University of California, Davis, CA 95616-8515, U.S.A.: *Fax* +1 (916) 752 4361: *E-mail* cvankessel@ucdavis.edu

DR S. VISSER, Department of Biological Sciences, The University of Calgary, 2500 University Drive NW, Calgary, Alberta, Canada T2N 1N4: *Fax* +1 (403) 289 9311: *E-mail* svisser@acs.ucalgary.ca

DR D. A. WARDLE, Landcare Research, P.O. Box 69, Lincoln 8152, New Zealand: *Fax* +64 3 325 2418: *E-mail* wardled@landcare.cri.nz

PROFESSOR J. C. ZAK, Texas Tech. University, Ecology Program, Department of Biological Sciences, Lubbock, TX 79409-3131, U.S.A.: *Fax* +1 (806) 742 2963: *E-mail* yzjoz@ttacs.ttu.edu

CONTENTS DIRECT

ContentsDirect delivers the table of contents of this journal, by e-mail, approximately two to four weeks prior to each issue's publication. To subscribe to this free service complete and return the form at the back of this issue or send an e-mail message to cdsubs@elsevier.co.uk

CONTENTS

Volume 30 Number 1

A. Miltner and **W. Zech**	1	Carbohydrate decomposition in beech litter as influenced by aluminium, iron and manganese oxides
Michael Stemmer, Martin H. Gerzabek and **Ellen Kandeler**	9	Organic matter and enzyme activity in particle-size fractions of soils obtained after low-energy sonication
M. Pansu, Z. Sallih and **P. Bottner**	19	Modelling of soil nitrogen forms after organic amendments under controlled conditions
J. P. Malone, R. J. Stevens and **R. J. Laughlin**	31	Combining the ^{15}N and acetylene inhibition techniques to examine the effect of acetylene on denitrification
Qishui Zhang and **John C. Zak**	39	Effects of water and nitrogen amendment on soil microbial biomass and fine root production in a semi-arid environment in West Texas
David R. Chadwick, Philip Ineson, Clive Woods and **Trevor G. Piearce**	47	Decomposition of *Pinus sylvestris* litter in litter bags: influence of underlying native litter layer
Denis Curtin, C. A. Campbell and **Abdul Jalil**	57	Effects of acidity on mineralization: pH-dependence of organic matter mineralization in weakly acidic soils
J. M. Moxley and **K. A. Smith**	65	Factors affecting utilisation of atmospheric CO by soils
Luigi Chiarini, Annamaria Bevivino, Silvia Tabacchioni and **Claudia Dalmastri**	81	Inoculation of *Burkholderia cepacia, Pseudomonas fluorescens* and *Enterobacter* sp. on *Sorghum bicolor*: root colonization and plant growth promotion of dual strain inocula
V. Rasiah and **B. D. Kay**	89	Legume N mineralization: effect of aeration and size distribution of water-filled pores
M. J. Vreeken-Buijs, J. Hassink and **L. Brussaard**	97	Relationships of soil microarthropod biomass with organic matter and pore size distribution in soils under different land use
Short Communications		
G. W. McCarty, R. Siddaramappa and **R. J. Wright**	107	Potential error associated with measurement of carbon mineralization in soil treated with coal combustion byproducts
M. A. Rao, A. Violante and **L. Gianfreda**	111	Interactions between tannic acid and acid phosphatase
C. N. Bedrock, M. V. Cheshire, B. L. Williams, I. Solntseva, S. J. Chapman, J. A. Chudek and **B. A. Goodman**	113	Identification of nitrogenous components of fungal and bacterial origin immobilized in decomposing wheat straw by NMR spectroscopy using ^{15}N CPMAS
Book Review	117	

Volume 30 Number 2

Marie-Christine Dictor, Laurent Tessier and **Guy Soulas**	119	Reassessement of the K_{ec} coefficient of the fumigation–extraction method in a soil profile
S. L. Rogers, R. S. Kookana, D. P. Oliver and **A. Richards**	129	Microbial degradation of strychnine rodenticide in South Australian agricultural soils: laboratory studies
J. S. Singh, A. S. Raghubanshi, V. S. Reddy, S. Singh and **A. K. Kashyap**	135	Methane flux from irrigated paddy and dryland rice fields, and from seasonally dry tropical forest and Savanna soils of India
C. J. Koopmans, A. Tietema and **J. M. Verstraten**	141	Effects of reduced N deposition on litter decomposition and N cycling in two N saturated forests in The Netherlands

Claudia Limmer and **Harold L. Drake** 153 Effects of carbon, nitrogen, and electron acceptor availability on anaerobic N_2-fixation in a beech forest soil

A. R. Dyer, J. C. S. Fowler and **G. H. Baker** 159 Detecting genetic variation in exotic earthworms, *Aporrectodea* spp. (Lumbricidae), in Australian soils using RAPD markers

Rita de C. G. Mesquita, Sarah W. Workman and **Constance L. Neely** 167 Slow litter decomposition in a *Cecropia*-dominated secondary forest of central Amazonia

T. K. Adhya, P. Pattnaik, S. N. Satpathy, S. Kumaraswamy and **N. Nethunathan** 177 Influence of phosphorus application on methane emission and production in flooded paddy soils

Karin van Dijk and **Eric B Nelson** 183 Inactivation of seed exudate stimulants of *Pythium ultimum* sporangium germination by biocontrol strains of *Enterobacter cloacae* and other seed-associated bacteria

Wietse De Boer, Paulien J. A. Klein Gunnewiek, Petra Lafeber, Jaap D. Janse, Bendien E. Spit and **Jan W. Woldendorp** 193 Anti-fungal properties of chitinolytic dune soil bacteria

J. L. Chotte, J. N. Ladd and **M. Amato** 205 Sites of microbial assimilation, and turnover of soluble and particulate ^{14}C-labelled substrates decomposing in a clay soil

Josef H. Görres, Marnie J. Dichiaro, Jodi B. Lyons and **José A. Amador** 219 Spatial and temporal patterns of soil biological activity in a forest and an old field

Jon E. Lindstrom, Ronald P. Barry and **Joan F. Braddock** 231 Microbial community analysis: a kinetic approach to constructing potential C source utilization patterns

Barbara A. Handley, Alan J. Hedges and **John E. Beringer** 241 Importance of host plants for detecting the population diversity of *Rhizobium leguminosarum* biovar *viciae* in soil

G. Puri and **M. R. Ashman** 251 Relationship between soil microbial biomass and gross N mineralisation

David C. Thompson, Donald Y. Kobayashi and **Bruce B. Clarke** 257 Suppression of summer patch by rhizosphere competent bacteria and their establishment on Kentucky bluegrass

R.-A. Sandaa, Ø. Enger and **V. Torsvik** 265 Rapid method for fluorometric quantification of DNA in soil

Short Communication
W. T. Frankenberger Jr. 269 Effects of trace elements on arsenic volatilization

Volume 30 Number 3

Mary C. Savin and **José A. Amador** 275 Biodegradation of norflurazon in a bog soil

P. J. A. Howard, D. M. Howard and **L. E. Lowe** 285 Effects of tree species and soil physico-chemical conditions on the nature of soil organic matter

Susumu Asakawa, Masayo Akagawa-Matsushita, Yosuke Koga and **Koichi Hayano** 299 Communities of methanogenic bacteria in paddy field soils with long-term application of organic matter

M. P. Bernal, A. F. Navarro, M. A. Sánchez-Monedero, A. Roig and **J. Cegarra** 305 Influence of sewage sludge compost stability and maturity on carbon and nitrogen mineralization in soil

B. S. Griffiths, K. Ritz, N. Ebblewhite, E. Paterson and **K. Killham** 315 Ryegrass/rhizosphere microbial community structure under elevated carbon dioxide concentrations, with observations on wheat rhizosphere

Kyoko Ikeda, Koki Toyota and **Makoto Kimura** 323 Role of extracellular pectinases in the rhizoplane competence of a rhizobacterium *Burkholderia pickettii* MSP3Rif

Shengjun Lu, Kim G. Mattson, Joe B. Zaerr and **John D. Marshall** 331 Root respiration of Douglas-fir seedlings: effects of N concentration

N. Z. Lupwayi and **I. Haque** 337 Mineralization of N, P, K, Ca and Mg from Sesbania and Leucaena leaves varying in chemical composition

Cecilia Palmborg, Anders Nordgren and **Erland Bååth** 345 Multivariate modelling of soil microbial variables in forest soil contaminated by heavy metals using wet chemical analyses and pyrolysis GC/MS

S. Ellis, M. T. Howe, K. W. T. Goulding, M. A. Mugglestone and **L. Dendooven** 359 Carbon and nitrogen dynamics in a grassland soil with varying pH: effect of pH on the denitrification potential and dynamics of the reduction enzymes

Susan J. Grayston, Shenquiang Wang, Colin D. Campbell and **Anthony C. Edwards** 369 Selective influence of plant species on microbial diversity in the rhizosphere

Anita Pandey, Eklabya Sharma and **Lok Man S. Palni** 379 Influence of bacterial inoculation on maize in upland farming systems of the Sikkim Himalaya

Christoph Schwarzer, Bernhard Auer, Jörg Klima and **Kurt Haselwandter** 385 Physiological and electron microscopical investigations on syntrophic dicyandiamide degradation by soil bacteria

B. Stenberg, M. Johansson, M. Pell, K. Sjödahl-Svensson, J. Stenström and **L. Torstensson** 393 Microbial biomass and activities in soil as affected by frozen and cold storage

Barry R. Taylor 403 Air-drying depresses rates of leaf litter decomposition

R. A. Wilson, B. A. Handley and **J. E. Beringer** 413 Bacteriocin production and resistance in a field population of *Rhizobium leguminosarum* biovar *viciae*

A. Saá, M. C. Trasar-Cepeda and **T. Carballas** 419 Soil P status and phosphomonoesterase activity of recently burnt and unburnt soil following laboratory incubation

Short Communication
K. D. Stephen, J. R. M. Arah, K. L. Thomas, J. Benstead and **D. Lloyd** 429 Gas diffusion coefficient profile in peat determined by modelling mass spectrometric data: implications for gas phase distribution

Volume 30 Number 4

Monika Gödde and **Ralf Conrad** 433 Simultaneous measurement of nitric oxide production and consumption in soil using a simple static incubation system, and the effect of soil water content on the contribution of nitrification

B. L. Candole and **C. S. Rothrock** 443 Using marked strains to assess the effect of hairy vetch amendment on the inoculum densities of *Thielaviopsis basicola, Pythium ultimum* and *Rhizoctonia solani*

Eli Zaady, Peter Groffman and **Moshe Shachak** 449 Nitrogen fixation in macro- and microphytic patches in the Negev desert

L. J. Sanger, P. Cox, P. Splatt, M. Whelan and **J. M. Anderson** 455 Variability in the quality and potential decomposability of *Pinus sylvestris* litter from sites with different soil characteristics: acid detergent fibre (ADF) and carbohydrate signatures

C. Crecchio and **G. Stotzky** 463 Insecticidal activity and biodegradation of the toxin from *Bacillus thuringiensis* subsp. *kurstaki* bound to humic acids from soil

H. Tapp and **G. Stotzky** 471 Persistence of the insecticidal toxin from *Bacillus thuringiensis* subsp. *kurstaki* in soil

A. Smolander, O. Priha, L. Paavolainen, J. Steer and **E. Mälkönen** 477 Nitrogen and carbon transformations before and after clear-cutting in repeatedly N-fertilized and limed forest soil

S. Yamulki, S. C. Jarvis and **P. Owen** 491 Nitrous oxide emissions from excreta applied in a simulated grazing pattern

K. D. Stephen, J. R. M. Arah, W. Daulat and **R. S. Clymo** 501 Root-mediated gas transport in peat determined by argon diffusion

Inko Arth, Peter Frenzel and **Ralf Conrad** 509 Denitrification coupled to nitrification in the rhizosphere of rice

Urs Simmen and **Ulrich Gisi** 517 Uptake of ^{14}C-SAN 789 F and ^{14}C-cyproconazole into germinating wheat following seed treatment at different soil matric potentials

K. Jayachandran, N. B. Stolpe, T. B. Moorman and **P. J. Shea** 523 Application of ^{14}C-most-probable-number technique to enumerate atrazine-degrading microorganisms in soil

R. D. Bardgett, S. Keiller, R. Cook and **A. S. Gilburn** 531 Dynamic interactions between soil animals and microorganisms in upland grassland soils amended with sheep dung: a microcosm experiment

Short Communications

R. J. Stevens, R. J. Laughlin and **J. P. Malone** 541 Measuring the mole fraction and source of nitrous oxide in the field

Rasmus N. Jørgensen, Bodil J. Jørgensen and **Niels E. Nielsen** 545 N_2O emission immediately after rainfall in a dry stubble field

Volume 30 Number 5

K. Haron, P. C. Brookes, J. M. Anderson and **Z. Z. Zakaria** 547 Microbial biomass and soil organic matter dynamics in oil palm (*Elaeis guineensis* jacq.) plantations, West Malaysia

V. L. Barbosa-Jefferson, F. J. Zhao, S. P. McGrath and **N. Magan** 553 Thiosulphate and tetrathionate oxidation in arable soils

T. Mueller, L. S. Jensen, N. E. Nielsen and **J. Magid** 561 Turnover of carbon and nitrogen in a sandy loam soil following incorporation of chopped maize plants, barley straw and blue grass in the field

Donald A. Klein, Mark W. Paschke and **Edward F. Redente** 573 Assessment of fungal–bacterial development in a successional shortgrass steppe by direct integration of chloroform-fumigation extraction (FE) and microscopically derived data

M. M. Coûteaux, K. B. McTiernan, B. Berg, D. Szuberla, P. Dardenne and **P. Bottner** 583 Chemical composition and carbon mineralisation potential of Scots pine needles at different stages of decomposition

P. Bottner, F. Austrui, J. Cortez, G. Billès and **M. M. Coûteaux** 597 Decomposition of ^{14}C- and ^{15}N-labelled plant material, under controlled conditions, in coniferous forest soils from a north–south climatic sequence in western Europe

Tommy Harder Nielsen and **Niels Peter Revsbech** 611 Nitrification, denitrification, and N-liberation associated with two types of organic hot-spots in soil

Joseph Troxler, Marcello Zala, Andreas Natsch, Jakob Nievergelt, Christoph Keel and **Geneviève Défago** 621 Transport of a biocontrol *Pseudomonas fluorescens* through 2.5-M deep outdoor lysimeters and survival in the effluent water

Sigrun Dahlin and **Ernst Witter** 633 Can the low microbial biomass C-to-organic C ratio in an acid and a metal contaminated soil be explained by differences in the substrate utilization efficiency and maintenance requirements?

C. Abadie, V. Edel and **C. Alabouvette** 643 Soil suppressiveness to fusarium wilt: influence of a cover-plant on density and diversity of fusarium populations

H. Keith 651 Calibration of the ^{32}P bioassay for eucalypt roots in the field

Short Communications

T. W. Willison, J. C. Baker, D. V. Murphy and **K. W. T. Goulding** 661 Comparison of a wet and dry ^{15}N isotopic dilution technique as a short-term nitrification assay

Karen D. Burkhead, Patricia J. Slininger and **David A. Schisler** 665 Biological control bacterium *Enterobacter cloacae* S11:T:07 (NRRL B-21050) produces the antifungal compound phenylacetic acid in Sabouraud maltose broth culture

C. A. Engelkes and **D. R. Fravel** 669 Procedure for electrophoretic analysis of proteins from metham sodium-treated microsclerotia of *Verticillium dahliae*

P. R. Herron, I. K. Toth, G. H. J. Heilig, A. D. L. Akkermans, A. Karagouni and **E. M. H. Wellington** 673 Selective effect of antibiotics on survival and gene transfer of streptomycetes in soil

Volume 30 Number 6

R. M. Zablotowicz, R. E. Hoagland and **S. C. Wagner** 679 2-Nitroacetanilide as substrate for determination of aryl acylamidase activity in soils

Hannu Fritze, Taina Pennanen and **Veikko Kitunen** 687 Characterization of dissolved organic carbon from burned humus and its effects on microbial activity and community structure

H. Pathak and **D. L. N. Rao** 702 Carbon and nitrogen mineralization from added organic matter in saline and alkali soils

Bernhard Mogge, Ernst-August Kaiser and **Jean-Charles Munch** 703 Nitrous oxide emissions and denitrification N-losses from forest soils in the Bornhöved Lake region (Northern Germany).

G. Cuenca, Z. De Andrade and **G. Escalante** 711 Diversity of glomalean spores from natural, disturbed and revegetated communities growing on nutrient-poor tropical soils

A. Fioretto, A. Musacchio, G. Andolfi and **A. Virzo De Santo** 721 Decomposition dynamics of litters of various pine species in a Corsican pine forest

Inger Bergman, Bo H. Svensson and **Mats Nilsson** 729 Regulation of methane production in a Swedish acid mire by pH, temperature and substrate

C. J. Watson and **C. L. Mills** 743 Gross nitrogen transformations in grassland soils as affected by previous management intensity

G. Almendros, M. E. Guadalix, F. J. González-Vila and **F. Martin** 755 Distribution of structural units in humic substances as revealed by multi-step selective degradations and ^{13}C-NMR of successive residues

C. R. Alvarez, R. Alvarez, M. S. Grigera and **R. S. Lavado** 767 Associations between organic matter fractions and the active soil microbial biomass

Laura Paavolainen and **Aino Smolander** 781 Nitrification and denitrification in soil from a clear-cut Norway spruce (*Picea abies*) stand

J. Cortez 783 Field decomposition of leaf litters: relationships between decomposition rates and soil moisture, soil temperature and earthworm activity

J. Cortez and **M. B. Bouché** 795 Field decomposition of leaf litters: earthworm–microorganism interactions—the ploughing-in effect

N. Gunapala and **K. M. Scow** 805 Dynamics of soil microbial biomass and activity in conventional and organic farming systems

David Boyle 817 Nutritional factors limiting the growth of *Lentinula edodes* and other white-rot fungi in wood

X. Zou and **M. Bashkin** 825 Soil carbon accretion and earthworm recovery following revegetation in abandoned sugarcane fields

Short Communication
Hee Woo Park, Ki Seok Koh and **Soon Cheol Park** 831 Molecular weights and inhibitor sensitivities of alkaline phosphatase isoenzymes from the midgut of the earthworm, *Eisenia andrei*

Volume 30 Number 7

Thomas E. Jordan, Donald E. Weller and **David L. Correll** 833 Denitrification in surface soils of a riparian forest: Effects of water, nitrate and sucrose additions

Bintoro Gunadi, Herman A. Verhoef and **Jacques J. M. Bedaux** 845 Seasonal dynamics of decomposition of coniferous leaf litter in a forest plantation (*Pinus merkusii*) in Central Java, Indonesia

J. A. Ashby, W. B. Bowden and **P. S. Murdoch** 853 Controls on denitrification in riparian soils in headwater catchments of a hardwood forest in the Catskill Mountains, U.S.A.

Hasta Pratopo Lukito, Kenji Kouno and **Tadao Ando** 865 Phosphorus requirements of microbial biomass in a regosol and an andosol

David Boyle, Charles Wiesner and **Andrew Richardson** 873 Factors affecting the degradation of polyaromatic hydrocarbons in soil by white-rot fungi

R. F. Grant 883 Simulation of methanogenesis in the mathematical model *ecosys*

J. Luo, R. W. Tillman, R. E. White and **P. R. Ball** 897 Variation in denitrification activity with soil depth under pasture

J. D. Jastrow, R. M. Miller and **J. Lussenhop** 905 Contributions of interacting biological mechanisms to soil aggregate stabilization in restored prairie

Zhenli He and **Jun Zhu** 917 Microbial utilization and transformation of phosphate adsorbed by variable charge minerals

J. Hallmann, A. Quadt-Hallmann, R. Rodríguez-Kábana and **J. W. Kloepper** 925 Interactions between *Meloidogyne incognita* and endophytic bacteria in cotton and cucumber

M. Shishido and **C. P. Chanway** 939 Storage effects on indigenous soil microbial communities and PGPR efficacy

R. C. Venette and **H. Ferris** 949 Influence of bacterial type and density on population growth of bacterial-feeding nematodes

Daniel L. Kelting, James A. Burger and **Gerry S. Edwards** 961 Estimating root respiration, microbial respiration in the rhizosphere, and root-free soil respiration in forest soils

Short Communication
W.-R. Knauber, A. J. Krotzky and **B. Schink** 969 Gradient gel electrophoretic characterization of humic substances and of bound residues of the herbicide bentazon

Volume 30 Number 8/9

Sung Ok Han and **Peter B. New** 975 Isolation of *Azospirillum* spp. from natural soils by immunomagnetic separation

D. W. Cullen and **P. R. Hirsch** 983 Simple and rapid method for direct extraction of microbial DNA from soil for PCR

Kil Yong Kim, D. Jordan and **G. A. McDonald** 995 *Enterobacter agglomerans*, phosphate solubilizing bacteria, and microbial activity in soil: Effect of carbon sources

F. Camiña, C. Trasar-Cepeda, F. Gil-Sotres and **C. Leirós** 1005 Measurement of dehydrogenase activity in acid soils rich in organic matter

S. J. Chapman and **M. Thurlow** 1013 Peat respiration at low temperatures

S. X. Chang and **C. M. Preston** 1023 Incorporation and extractability of residual ^{15}N in a coniferous forest soil

Angela Hodge, Eric Paterson, Susan J. Grayston, Colin D. Campbell, Brian G. Ord and **Kenneth Killham**	1033	Characterisation and microbial utilisation of exudate material from the rhizosphere of *Lolium perenne* grown under CO_2 enrichment
Jeanine L. Kay-Shoemake, Mary E. Watwood, Rodrick D. Lentz and **Robert E. Sojka**	1045	Polyacrylamide as an organic nitrogen source for soil microorganisms with potential effects on inorganic soil nitrogen in agricultural soil
P. V. Ajithkumar, K. P. Gangadhara, P. Manilal and **A. A. M. Kunhi**	1053	Soil inoculation with *Pseudomonas aeruginosa* 3mT eliminates the inhibitory effect of 3-chloro- and 4-chlorobenzoate on tomato seed germination
C. Crecchio and **G. Stotzky**	1061	Binding of DNA on humic acids: Effect on transformation of *Bacillus subtilis* and resistance to DNase
Karin Ahlich, Daniel Rigling, Ottmar Holdenrieder and **Thomas N. Sieber**	1069	Dark septate hyphomycetes in swiss conifer forest soils surveyed using Norway-spruce seedlings as bait
J. Bauhus, D. Paré and **L. Côté**	1077	Effects of tree species, stand age and soil type on soil microbial biomass and its activity in a southern boreal forest
Benny Chefetz, Zohar Kerem, Yona Chen and **Yitzhak Hadar**	1091	Isolation and partial characterization of laccase from a thermophilic composted municipal solid waste
M. S. Coyne, Q. Zhai, C. T. MacKown and **R. I. Barnhisel**	1099	Gross nitrogen transformation rates in soil at a surface coal mine site reclaimed for prime farmland use
R. Segers and **S. W. M. Kengen**	1107	Methane production as a function of anaerobic carbon mineralization: A process model
R. J. Stevens, R. J. Laughlin and **J. P. Malone**	1119	Soil pH affects the processes reducing nitrate to nitrous oxide and di-nitrogen
Jay Gulledge and **Joshua P. Schimel**	1127	Moisture control over atmospheric CH_4 consumption and CO_2 production in diverse Alaskan soils
Z. Q. An, B. Z. Guo and **J. W. Hendrix**	1133	Viability of soilborne spores of glomalean mycorrhizal fungi
B. A. Byzov, V. N. Thanh, I. P. Bab'eva, E. B. Tretyakova, I. A. Dyvak and **Ya. M. Rabinovich**	1137	Killing and hydrolytic activities of the gut fluid of the millipede *Pachyiulus flavipes* C.L. Koch on yeast cells
R. P. Griffiths, P. S. Homann and **R. Riley**	1147	Denitrification enzyme activity of Douglas-fir and red alder forest soils of the Pacific Northwest
Nicholas V. Coleman, Darryl R. Nelson and **Trevor Duxbury**	1159	Aerobic biodegradation of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) as a nitrogen source by a *Rhodococcus* sp., strain DN22
Wendy L. Goodfriend	1169	Microbial community patterns of potential substrate utilization: a comparison of salt marsh, sand dune, and seawater-irrigated agronomic systems
V. O. Biederbeck, C. A. Campbell, V. Rasiah, R. P. Zentner and **Guang Wen**	1177	Soil quality attributes as influenced by annual legumes used as green manure
Sigmund Jensen and **Rolf Arnt Olsen**	1187	Atmospheric methane consumption in adjacent arable and forest soil systems
Short Communications		
Martin B. Dickman and **Ilan Chet**	1195	Biodegradation of oxalic acid: A potential new approach to biological control
A. Muscolo, S. Cutrupi and **S. Nardi**	1199	IAA detection in humic substances
Andrew S. Ball and **Bert G. Drake**	1203	Stimulation of soil respiration by carbon dioxide enrichment of marsh vegetation

Pete Falloon, Pete Smith, Kevin Coleman and **Stewart Marshall**	1207	Estimating the size of the inert organic matter pool from total soil organic carbon content for use in the Rothamsted carbon model
O. Roger Anderson and **P. J. Bohlen**	1213	Abundances and diversity of gymnamoebae associated with earthworm (*Lumbricus terrestris*) middens in a northeastern U.S. forest
K. Annapurna and **Y. D. Gaur**	1217	Antigenic diversity amongst strains of *Azospirillum* from an Indian soil and their host specificity
J. L. Chotte, J. N. Ladd and **M. Amato**	1221	Measurement of biomass C, N and ^{14}C of a soil at different water contents using a fumigation-extraction assay
Yoav Bashan and **Gina Holguin**	1225	Proposal for the division of plant growth-promoting rhizobacteria into two classifications: biocontrol-PGPB (plant growth-promoting bacteria) and PGPB

Volume 30 Number 10/11

I. M. Young and **K. Ritz**	1229	Can there be a contemporary ecological dimension to soil biology without a habitat?
Stewart F. Ledgard, Steve C. Jarvis and **David J. Hatch**	1233	Short-term nitrogen fluxes in grassland soils under different long-term nitrogen management regimes
A. M. Jackson and **A. S. Ball**	1243	Importance of environmental factors on the growth of *Thermoactinomyces thalpophilus*
P. S. J. Verburg, A. Gorissen and **W. J. Arp**	1251	Carbon allocation and decomposition of root-derived organic matter in a plant–soil system of *Calluna vulgaris* as affected by elevated CO_2
K. H. Söderberg and **E. Bååth**	1259	Bacterial activity along a young barley root measured by the thymidine and leucine incorporation techniques
Evgenia V. Blagodatskaya and **Traute-Heidi Anderson**	1269	Interactive effects of pH and substrate quality on the fungal-to-bacterial ratio and qCO_2 of microbial communities in forest soils
P. Marschner and **D. E. Crowley**	1275	Phytosiderophores decrease iron stress and pyoverdine production of *Pseudomonas fluorescens* PF-5 (*pvd-inaZ*)
C. Ehaliotis, G. Cadisch and **K. E. Giller**	1281	Substrate amendments can alter microbial dynamics and N availability from maize residues to subsequent crops
T. H. De Luca	1293	Relationship of 0.5 M K_2SO_4 extractable anthrone-reactive carbon to indices of microbial activity in forest soils
A. J. Midwood and **T. W. Boutton**	1301	Soil carbonate decomposition by acid has little effect on $\delta^{13}C$ of organic matter
B. Grisi, C. Grace, P. C. Brookes, A. Benedetti and **M. T. Dell'abate**	1309	Temperature effects on organic matter and microbial biomass dynamics in temperate and tropical soils
P. Bagnasco, L. De La Fuente, G. Gualtieri, F. Noya and **A. Arias**	1317	Fluorescent *Pseudomonas* spp. as biocontrol agents against forage legume root pathogenic fungi
P. F. Grierson, N. B. Comerford and **E. J. Jokela**	1323	Phosphorus mineralization kinetics and response of microbial phosphorus to drying and rewetting in a Florida Spodosol
Berit Swensen and **Lars R. Bakken**	1333	Nitrification potential and urease activity in a mineral subsoil
Flemming Ekelund	1343	Enumeration and abundance of mycophagous protozoa in soil, with special emphasis on heterotrophic flagellates
Antonio Gallardo and **José Merino**	1349	Soil nitrogen dynamics in response to carbon increase in a mediterranean shrubland of SW Spain
R. M. Mohr, H. H. Janzen, E. Bremer and **M. H. Entz**	1359	Fate of symbiotically-fixed $^{15}N_2$ as influenced by method of alfalfa termination

L. Tessier, E. G. Gregorich and **E. Topp** 1369 Spatial variability of soil microbial biomass measured by the fumigation extraction method, and K_{EC} as affected by depth and manure application

B. S. Griffiths, R. E. Wheatley, T. Olesen, K. Henriksen, F. Ekelund and **R. Rønn** 1379 Dynamics of nematodes and protozoa following the experimental addition of cattle or pig slurry to soil

Ken E. Giller, Ernst Witter and **Steve P. Mcgrath** 1389 Toxicity of heavy metals to microorganisms and microbial processes in agricultural soils: a review

P. F. Schweiger and **I. Jakobsen** 1415 Dose–response relationships between four pesticides and phosphorus uptake by hyphae of arbuscular mycorrhizas

Gunnar Börjesson, Ingvar Sundh, Anders Tunlid and **Bo H. Svensson** 1423 Methane oxidation in landfill cover soils, as revealed by potential oxidation measurements and phospholipid fatty acid analyses

Murray J. Unkovich and **John S. Pate** 1435 Symbiotic effectiveness and tolerance to early season nitrate in indigenous populations of subterranean clover rhizobia from S.W. Australian pastures

Thomas Appel 1445 Non-biomass soil organic N—the substrate for N mineralization flushes following soil drying–rewetting and for organic N rendered $CaCl_2$-extractable upon soil drying

M. B. Aberra, S. Seah and **K. Sivasithamparam** 1457 Suppression of the take-all fungus (*Gaeumannomyces graminis* var. *tritici*) by a sterile red fungus through induced resistance in wheat (*Triticum aestivum*) seedling roots

Jay Gulledge, Paul A. Steudler and **Joshua P. Schimel** 1463 Effect of CH_4-starvation on atmospheric CH_4 oxidizers in Taiga and temperate forest soils

Short Communications

G. Sparling, Maja Vojvodić-Vuković and **L. A. Schipper** 1469 Hot-water-soluble C as a simple measure of labile soil organic matter: the relationship with microbial biomass C

M. E. Aouani, R. Mhamdi, M. Mars and **R. Ghrir** 1473 Nodulation and growth of common bean under NaCl-stress

Sarah Hetherington and **Jonathan M. Anderson** 1477 Simplified procedure for the characterisation of plant lignins by alkaline CuO oxidation

E. Benizri, A. Courtade, C. Picard and **A. Guckert** 1481 Role of maize root exudates in the production of auxins by *Pseudomonas fluorescens* M.3.1.

Volume 30 Number 12

Claudio Marzadori, Silvia Miletti, Carlo Gessa and **Stefano Ciurli** 1485 Immobilization of jack bean urease on hydroxyapatite: urease immobilization in alkaline soils

C. K. Smith, A. D. Munson and **M. R. Coyea** 1491 Nitrogen and phosphorus release from humus and mineral soil under black spruce forests in central Quebec

Rota Wagai, Kristofor R. Brye, Stith T. Gower, John M. Norman and **Larry G. Bundy** 1501 Land use and environmental factors influencing soil surface CO_2 flux and microbial biomass in natural and managed ecosystems in southern Wisconsin

Samir Kumar Mukherjee and **Shuichi Asanuma** 1511 Possible role of cellular phosphate pool and subsequent accumulation of inorganic phosphate on the aluminum tolerance in *Bradyrhizobium japonicum*

Y. Huang, B. A. Stankiewicz, G. Eglinton, C. E. Snape, B. Evans, P. M. Latter and **P. Ineson** 1517 Monitoring biomacromolecular degradation of *Calluna vulgaris* in a 23 year field experiment using solid state ^{13}C-NMR and pyrolysis-GC/MS

Timo Domisch, Leena Finér, Marjut Karsisto, Raija Laiho and **Jukka Laine** 1529 Relocation of carbon from decaying litter in drained peat soils

G. Geiger, H. Brandl, G. Furrer and **R. Schulin** 1537 The effect of copper on the activity of cellulase and β-glucosidase in the presence of montmorillonite or Al-montmorillonite

Johannes Lehmann, Ninkabou Poidy, Götz Schroth and **Wolfgang Zech** 1545 Short-term effects of soil amendment with tree legume biomass on carbon and nitrogen in particle size separates in Central Togo

E.-A. Kaiser, K. Kohrs, M. Kücke, E. Schnug, O. Heinemeyer and **J. C. Munch** 1553 Nitrous oxide release from arable soil: importance of N-fertilization, crops and temporal variation

M. Francesca Cotrufo, María Jesús I. Briones and **Phil Ineson** 1565 Elevated CO_2 affects field decomposition rate and palatability of tree leaf litter: importance of changes in substrate quality

V. Riis, H. Lorbeer and **W. Babel** 1573 Extraction of microorganisms from soil: evaluation of the efficiency by counting methods and activity measurements

Lynne F. Whitehead, Susan Young and **David A. Day** 1583 Aspartate and alanine movement across symbiotic membranes of soybean nodules

Richard D. Bowden, Kathleen M. Newkirk and **Gina M. Rullo** 1591 Carbon dioxide and methane fluxes by a forest soil under laboratory-controlled moisture and temperature conditions

N. Nunan, M. A. Morgan and **M. Herlihy** 1599 Ultraviolet absorbance (280 nm) of compounds released from soil during chloroform fumigation as an estimate of the microbial biomass

M. Soedarjo and **D. Borthakur** 1605 Mimosine, a toxin produced by the tree-legume *Leucaena* provides a nodulation competition advantage to mimosine-degrading *Rhizobium* strains

Short Communications

Rock Chabot, Chantal J. Beauchamp, Joseph W. Kloepper and **Hani Antoun** 1615 Effect of phosphorus on root colonization and growth promotion of maize by bioluminescent mutants of phosphate-solubilizing *Rhizobium leguminosarum* biovar *phaseoli*

Gamini Seneviratne and **L. H. J. van Holm** 1619 CO_2, CH_4 and N_2O emissions from a wetted tropical upland soil following surface mulch application

S. L. Rogers, S. M. Froscio, R. S. Kookana and **D. P. Oliver** 1623 Degradation of strychnine by pure bacterial cultures isolated from South Australian agricultural soils

Volume 30 Number 13

Review

David A. Wardle 1627 Controls of temporal variability of the soil microbial biomass: a global-scale synthesis

Ben G. McMillen, Sato Juniper and **L. K. Abbott** 1639 Inhibition of hyphal growth of a vesicular-arbuscular mycorrhizal fungus in soil containing sodium chloride limits the spread of infection from spores

Jeanine L. Kay-Shoemake, Mary E. Watwood, Robert E. Sojka and **Rodrick D. Lentz** 1647 Polyacrylamide as a substrate for microbial amidase in culture and soil

O. Mario Aguilar, D. H. Grasso, P. M. Riccillo, M. V. López and **E. Szafer** 1655 Rapid identification of bean *Rhizobium* isolates by a *nif*H gene-PCR assay

Danilo Lopez-Hernandez, M. Brossard and **E. Frossard** 1663 P-isotopic exchange values in relation to Po mineralisation in soils with very low P-sorbing capacities

A. N. Ganeshamurthy, K. M. Manjaiah and **A. Subba Rao** 1671 Mobilization of nutrients in tropical soils through worm casting: availability of macronutrients

Thaïs Winsome and **John G. McColl** 1677 Changes in chemistry and aggregation of a california forest soil worked by the earthworm *Argilophilus papillifer* Eisen (Megascolecidae)

D. P. C. Stewart, K. C. Cameron and **I. S. Cornforth**	1689	Inorganic-N release from spent mushroom compost under laboratory and field conditions
George G. Brown, Paul F. Hendrix and **Michael H. Beare**	1701	Earthworms (*Lumbricus rubellus*) and the fate of ^{15}N in surface-applied Sorghum residues
E. S. P. Bromfield, A. M. P. Behara, R. S. Singh and **L. R. Barran**	1707	Genetic variation in local populations of *Sinorhizobium meliloti*
Steven D. Siciliano and **James J. Germida**	1717	Biolog analysis and fatty acid methyl ester profiles indicate that pseudomonad inoculants that promote phytoremediation alter the root-associated microbial community of *Bromus biebersteinii*
C. Strehl and **J. Prietzel**	1725	Method for the partitioning of organic sulphur in forest soil O layers
N. Z. Lupwayi, W. A. Rice and **G. W. Clayton**	1733	Soil microbial diversity and community structure under wheat as influenced by tillage and crop rotation
S. A. Blagodatsky and **O. Richter**	1743	Microbial growth in soil and nitrogen turnover: a theoretical model considering the activity state of microorganisms
S. A. Blagodatsky, I. V. Yevdokimov, A. A. Larionova and **J. Richter**	1757	Microbial growth in soil and nitrogen turnover: model calibration with laboratory data
C. L. Douglas Jr., P. E. Rasmussen, H. P. Collins and **S. L. Albrecht**	1765	Nitrogen mineralization across a climosequence in the Pacific Northwest
R. Neilson, D. Hamilton, J. Wishart, C. A. Marriott, B. Boag, L. L. Handley, C. M. Scrimgeour, J. W. McNicol and **D. Robinson**	1773	Stable isotope natural abundances of soil, plants and soil invertebrates in an upland pasture
M. Brzezińska, Z. Stępniewska and **W. Stępniewski**	1783	Soil oxygen status and dehydrogenase activity
R. T. Aggangan, A. M. O'Connell, J. F. McGrath and **B. Dell**	1791	Fertilizer and previous land use effects on C and N mineralization in soils from *Eucalyptus globulus* plantations
Yuc-P. Hsieh, Chou-Her Yang and **Jinan Feng**	1799	Sulfate reduction and a molybdate-induced soluble nitrogen flush in sediments during incubation
Frank Schönholzer, Lukas Kohli, Dittmar Hahn, Otto Daniel, Christiane Goez and **Josef Zeyer**	1805	Effects of decomposition of leaves on bacterial biomass and on palatability to *Lumbricus terrestris* L.
F. S. Hay, J. H. Niezen, L. Bateson and **S. Wilson**	1815	Invasion of sheep dung by nematophagous fungi and soil nematodes on a hill country pasture in New Zealand
Paul Gibbs and **Declan Barraclough**	1821	Gross mineralisation of nitrogen during the decomposition of leaf protein I (ribulose 1,5-diphosphate carboxylase) in the presence or absence of sucrose
P. E. Rasmussen, C. L. Douglas Jr., H. P. Collins and **S. L. Albrecht**	1829	Long-term cropping system effects on mineralizable nitrogen in soil
Short Communications		
A. N. Ganeshamurthy, K. M. Manjaiah and **A. Subba Rao**	1839	Mobilization of nutrients in tropical soils through worm casting: availability of micronutrients
Shuijin Hu and **Ariena H. C. Van Bruggen**	1841	Efficiencies of chloroform fumigation in soil: effects of physiological states of bacteria
C. Varela-Castejón, B. González-Penalta, A. Vilariño and **M. J. Sainz**	1845	Fluorescent light inhibits the germination of propagules of the arbuscular mycorrhizal fungus *Glomus macrocarpum*
R. Dwivedi	1849	Soil solarization and the survival of two fungal pathogens of sugarcane and the composition of the soil fungal community
S. F. Wright, A. Upadhyaya and **J. S. Buyer**	1853	Comparison of N-linked oligosaccharides of glomalin from arbuscular mycorrhizal fungi and soils by capillary electrophoresis

Accelerated Paper

Manuela Röver, Otto Heinemeyer and **Ernst-August Kaiser** 1859 Microbial induced nitrous oxide emissions from an arable soil during winter

Review

Richard D. Bardgett, David A. Wardle and **Gregor W. Yeates** 1867 Linking above-ground and below-ground interactions: how plant responses to foliar herbivory influence soil organisms

D. Kelly Cartwright and **H. W. Spurr Jr.** 1879 Biological control of *Phytophthora parasitica* var. *nicotianae* on tobacco seedlings with non-pathogenic binucleate *Rhizoctonia* fungi

P. H. Williams, S. C. Jarvis and **E. Dixon** 1885 Emission of nitric oxide and nitrous oxide from soil under field and laboratory conditions

D. L. Jones and **A. C. Edwards** 1895 Influence of sorption on the biological utilization of two simple carbon substrates

Bettina Gilbert and **Peter Frenzel** 1903 Rice roots and CH_4 oxidation: the activity of bacteria, their distribution and the microenvironment

N. Gunapala, R. C. Venette, H. Ferris and **K. M. Scow** 1917 Effects of soil management history on the rate of organic matter decomposition

Roger H. Williams, John M. Whipps and **Roderic C. Cooke** 1929 Role of soil mesofauna in dispersal of *Coniothyrium minitans*: transmission to sclerotia of *Sclerotinia sclerotiorum*

R. H. Williams, J. M. Whipps and **R. C. Cooke** 1937 Role of soil mesofauna in dispersal of *Coniothyrium minitans*: mechanisms of transmission

H. G. M. Edwards, J. M. Holder and **D. D. Wynn-Williams** 1947 Comparative FT-Raman spectroscopy of *Xanthoria* lichen-substratum systems from temperate and Antarctic habitats

Moeen Abu Hatab, Robin J. Stuart and **Randy Gaugler** 1955 Antibiotic resistance and protease production by *Photorhabdus luminescens* and *Xenorhabdus poinarii* bacteria symbiotic with entomopathogenic nematodes variation among species and strains

B. Mary, S. Recous and **D. Robin** 1963 A model for calculating nitrogen fluxes in soil using ^{15}N tracing

Bradley P. Degens 1981 Microbial functional diversity can be influenced by the addition of simple organic substrates to soil

B. P. Degens 1989 Decreases in microbial functional diversity do not result in corresponding changes in decomposition under different moisture conditions

M. C. Rillig and **M. F. Allen** 2001 Arbuscular mycorrhizae of *Gutierrezia sarothrae* and elevated carbon dioxide: evidence for shifts in C allocation to and within the mycobiont

R. W. O'Dowd and **D. W. Hopkins** 2009 Mineralization of carbon from D- and L-amino acids and D-glucose in two contrasting soils

A. Lomander, T. Kätterer and **O. Andrén** 2017 Carbon dioxide evolution from top- and subsoil as affected by moisture and constant and fluctuating temperature

A. Lomander, T. Kätterer and **O. Andrén** 2023 Modelling the effects of temperature and moisture on CO_2 evolution from top- and subsoil using a multi-compartment approach

Lars Vesterdal 2031 Potential microbial nitrogen and phosphorus availability in forest floors

H. Amir and **R. Pineau** 2043 Effects of metals on the germination and growth of fungal isolates from New Caledonian ultramafic soils

Gary D. Bending, Mary K. Turner and **Ian G. Burns** 2055 Fate of nitrogen from crop residues as affected by biochemical quality and the microbial biomass

S. de Neve and **G. Hofman** 2067 N mineralization and nitrate leaching from vegetable crop residues under field conditions: a model evaluation

R. D. Lovell and **S. C. Jarvis**	2077	Soil microbial biomass and activity in soil from different grassland management treatments stored under controlled conditions
A. R. Mosier, J. A. Delgado and **M. Keller**	2087	Methane and nitrous oxide fluxes in an acid Oxisol in western Puerto Rico: effects of tillage, liming and fertilization
Segundo Urquiaga, Georg Cadisch, Bruno J. R. Alves, Robert M. Boddey and **Ken E. Giller**	2099	Influence of decomposition of roots of tropical forage species on the availability of soil nitrogen
C. Fang and **J. B. Moncrieff**	2107	Simple and fast technique to measure CO_2 profiles in soil
M. Bonmati, B. Ceccanti and **P. Nannipieri**	2113	Protease extraction from soil by sodium pyrophosphate and chemical characterization of the extracts
D. M. Goodman and **J. A. Trofymow**	2127	Distribution of ectomycorrhizas in micro-habitats in mature and old-growth stands of Douglas-fir on southeastern Vancouver Island
V. P. Yakovchenko, L. J. Sikora and **P. D. Millner**	2139	Carbon and nitrogen mineralization of added particulate and macroorganic matter
Sabine Houot, Enrique Barriuso and **Valérie Bergheaud**	2147	Modifications to atrazine degradation pathways in a loamy soil after addition of organic amendments
C. K. Smith, H. L. Gholz and **F. de Assis Oliveira**	2159	Fine litter chemistry, early-stage decay, and nitrogen dynamics under plantations and primary forest in Lowland Amazonia
Short Communications		
F. S. Ali, T. E. Loynachan, A. M. M. Hammad and **Y. Aharchi**	2171	Polyvirulent rhizobiophage from a soybean rhizosphere soil
P. Rowell, W. James, W. L. Smith, L. L. Handley and **C. M. Scrimgeour**	2177	^{15}N discrimination in molybdenum- and vanadium-grown N_2-fixing *Anabaena variabilis* and *Azotobacter vinelandii*
J. R. Hirth, B. M. McKenzie and **J. M. Tisdall**	2181	Roots of perennial ryegrass (*Lolium perenne*) influence the burrowing of the endogeic earthworm, *Aporrectodea rosea*
Zahir Ahmad Zahir and **Muhammad Arshad**	2185	Response of *Brassica carinata* and *Lens culinaris* to the ethylene precursors L-methionine and 1-aminocyclopropane-1-carboxylic acid
Erratum	2189	